The Mining Journal

Established 1835 — Railway & Commercial Gazette

Vol. CCXLIV No. 6231 — LONDON, JANUARY 21, 1955 — PRICE 8d

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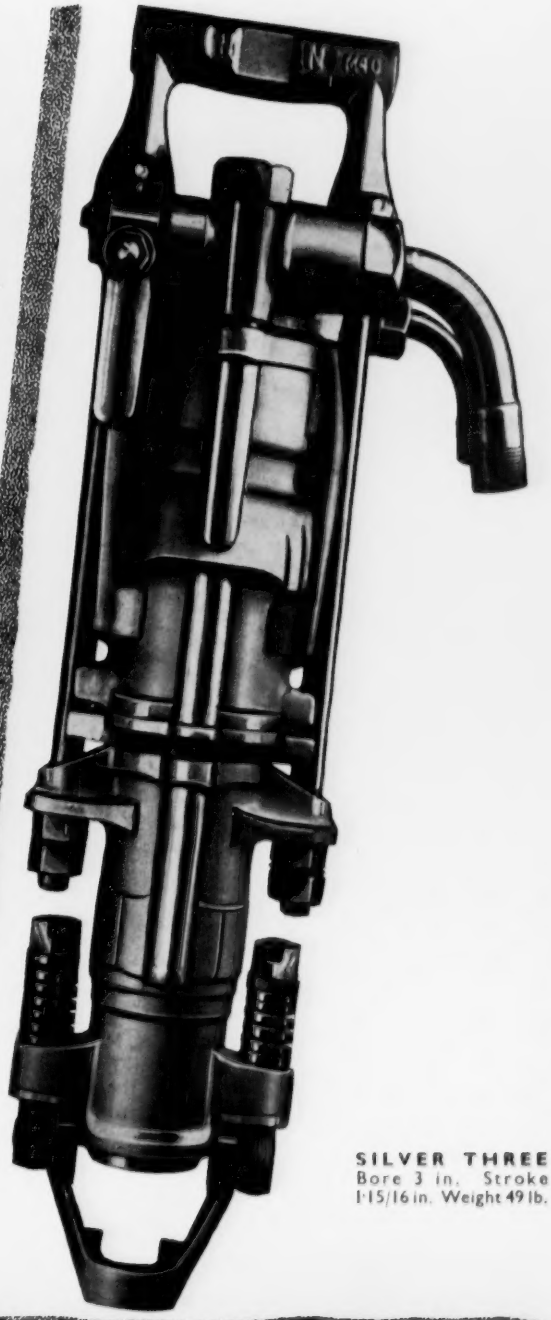

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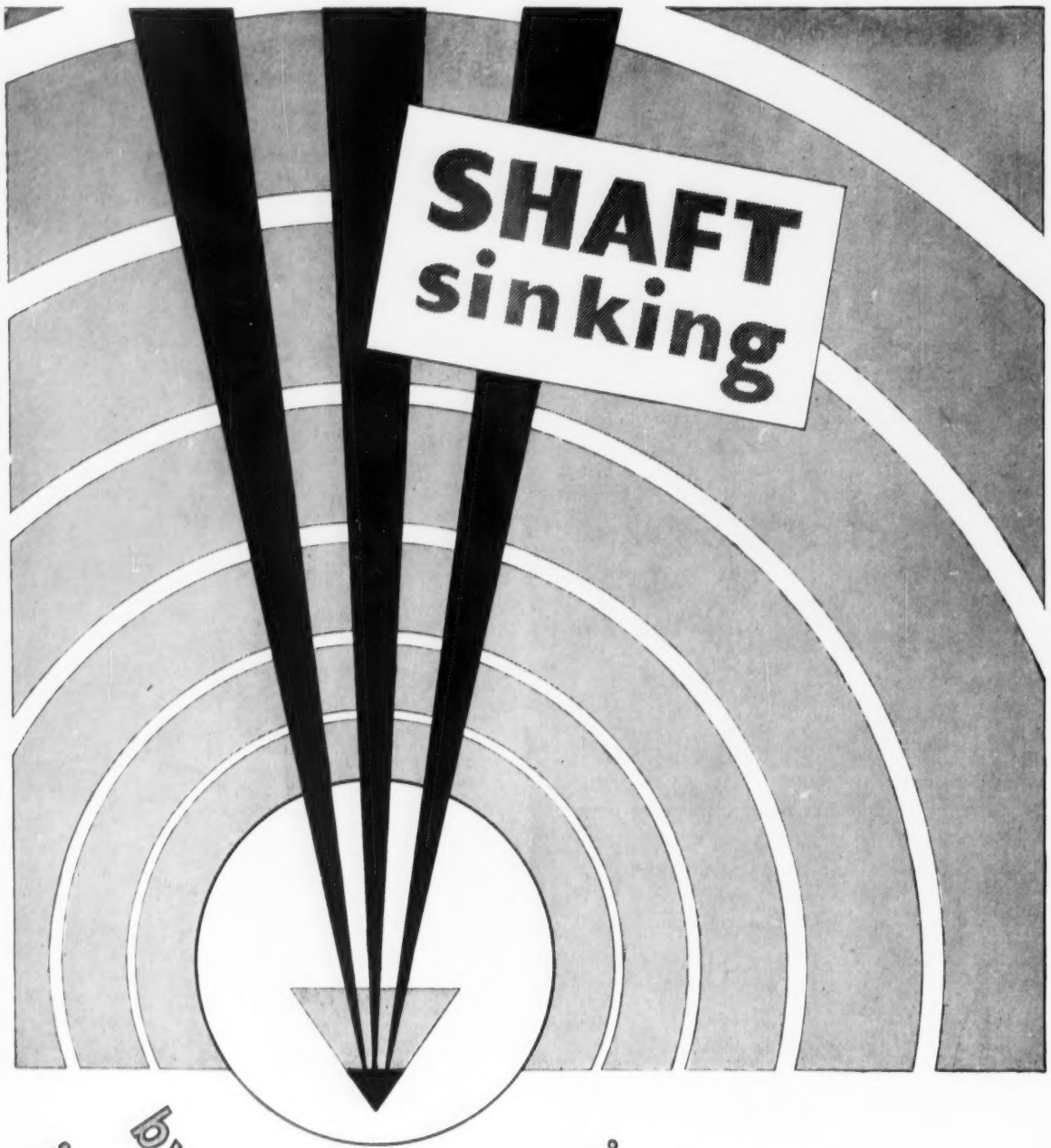

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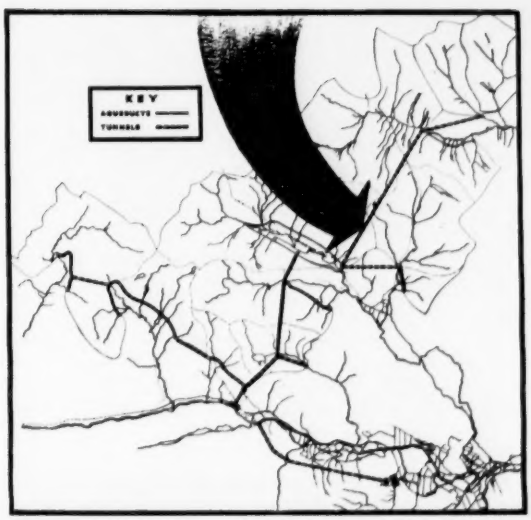

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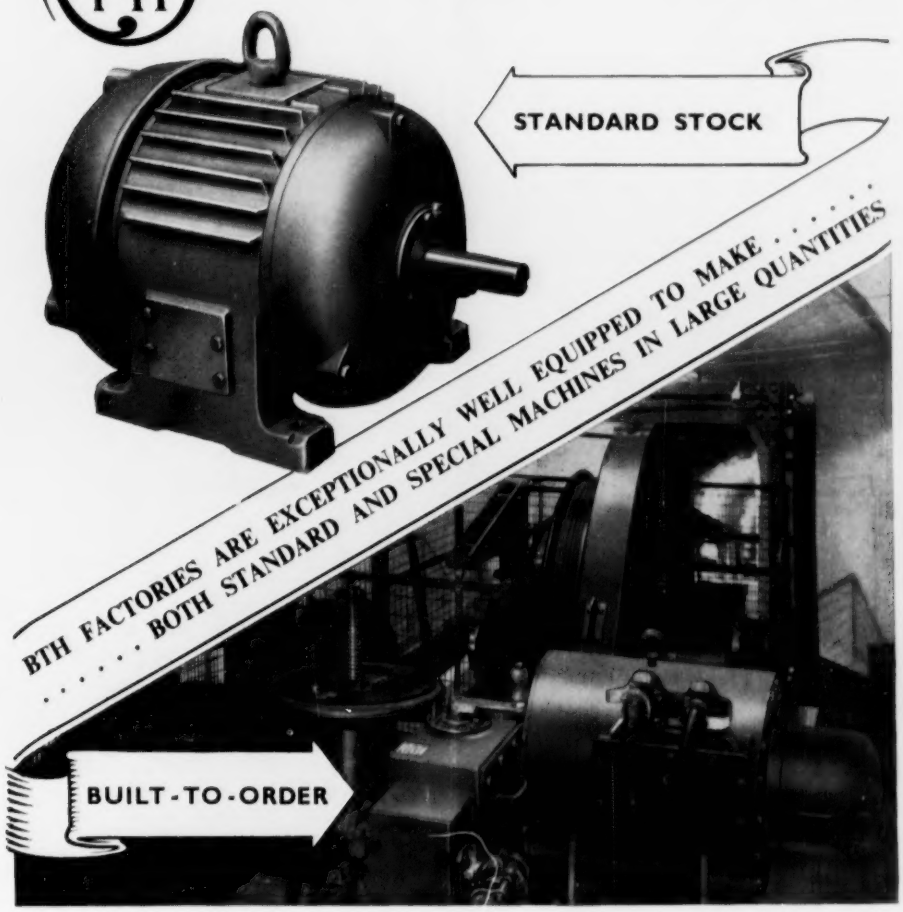
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NOTES AND COMMENTS

Copper From Peru

The information so far released about the plans for exploiting Toquepala still leave the picture uncompleted and it may well be some time before the bare patches are filled in. The prospecting of Toquepala, which has now come to an end, has been carried on by Northern Peru Copper Co. — a subsidiary of American Smelting and Refining. Now as the time for construction and operation approaches, a new company, Southern Peru Copper Corpn. has been formed for the purpose. In Southern Peru Copper, American Smelting and Refining will own 57½ per cent, Cerro de Pasco 16 per cent, Newmont 10¼ per cent and Phelps Dodge 15 per cent.

It is to Southern Peru Copper that the Export and Import Bank has offered a loan of $100,000,000 if a similar sum can be found among private investors, and it is with Southern Peru Copper that the Peruvian government has entered an agreement assuring stable income tax rates, waiver of import duties, freedom of copper exports and free exchange rates. In addition Quellaveco, previously owned by A. S. & R., and Cuajone, previously owned by Cerro de Pasco and Newmont have passed to Southern Peru Copper. The total known reserves of the new company are 400,000,000 tons at Toquepala, 400,000,000 at Cuajone and 200,000,000 at Quellaveco. These are all very low grade — probably bearing no better than 1 per cent copper.

This is the first time that American copper companies have lined up in this way to develop foreign reserves of this magnitude. There appear to be sound technical reasons for their doing so. The properties are so close together that they could all share some of the transport facilities at the port of Ilo, the port installations there, the mill and concentrator at Toquepala, the electric power supply and telephone lines at Ilo and the Ilo smelter.

Not all of these details are, of course, by any means settled, but whatever the technical considerations involved, the commercial consequences deserve attention. Peruvian copper is now well and truly sewn up and it is unlikely that the selling price could diverge significantly from the American price and virtually impossible that it could be sold so as to threaten it. Nothing is yet known as to the likely working costs of the reserves but since Toquepala and Quellaveco can be mined wholly, and Cuajone partly by opencast methods, there should not be any difficulty while copper is selling at 30 c. per lb. New York.

Again, it is not certain how soon any of these properties will be producing on a commercial scale, but it will probably be around 1960 ; by that time known expansion plans will have produced an annual extra of 260,000 tons from the United States, 81,000 from Canada, 76,000 tons from the Copperbelt and 45,000 tons from Yugoslavia. In other words, when Toquepala is ready to turn out its predicted 100,000 tons a year (and this figure disregards output from Cuajone and Quellaveco) copper may well be in a period of significant — if only temporary — surplus. When Mr. R. L. Prain was asked at his recent address on the Copperbelt at the Royal Society of Arts whether there was an assured market for the substantial production he replied simply " No, sir ". Present efforts to hold down the price suggests that the American copper companies hold a similarly circumspect view.

India's Expanding Steel Industry

Whatever steel production target the Indian Government finally proclaims as its objective to be achieved within the next five years—estimates currently range from 4,500,000 tons to 6,000,000 tons—there can be no doubt that India is embarking on a policy to more than double its output of steel in the next few years.

At present India's steel industry is comprised of three plants, all run by private enterprise, the Tata Iron and Steel Factory at Jamshedpur, the Indian Steel and Iron Works at Burnpur and Kulti, and the Mysore Steel Works at Bhadravati. Additionally, the Indian Government ordered a steel plant from Krupp a year ago which will be completely State owned. This Indo-German enterprise, known as the Hindustan Steel Works, is situated at Rourkela in Orissa and will have a capacity of 500,000 tons of steel ingots, or about 360,000 tons of finished steel, and is

expected to come into production by 1958/59.

Currently, discussions for additional steel capacity are in progress between the Indian Government and a Soviet mission to consider a Russian offer to build a steel plant with a mill size capable of producing either 850,000 tons or 1,000,000 tons annually. At the same time discussions have been entered into with the U.K. Metallurgical Equipment Export Company for the construction of a 1,000,000 ton capacity plant.

Agreement has not yet been reached on either of these proposals but a decision on the Soviet offer is thought to be imminent. A sixteen-man Soviet team of steel experts have been in India since November last and they are expected to submit a preliminary report to the Indian Government shortly. The leader of the Soviet team, Mr. A. A. Trussov, said that six sites had been inspected and sufficient information had been collected to enable a report to be submitted. During their tour of the country the Russian mission discussed with the Madras Government the possibilities of starting a steel plant at Salem and combining it with the lignite scheme at Neiveli. Mr. Trussov said that the idea of setting up a steel plant in South India was worth investigating but it was too early to decide on the question of utilization of lignite as a source of power for industrial purposes. The full scope of lignite exploitation in South India, he said, could be judged only when it was put on a commercial basis.

On the other hand, the leader of the Soviet team said that the incidence of coal and iron occurrences made North India a suitable site for a steel plant. In this connection, the Government of Mysore has urged that the location of the proposed iron and steel plant be in the Bellary district, supporting the worth of this area in a memorandum which stated that the availability of iron in the district was 125,000,000 tons with an iron content of 67 per cent and only a very small percentage of phosphorus. Moreover, the Mysore Minister for Industries declared that extensive deposits of manganese and chromite ores were also available. The chief drawback to this proposal is that the Bellary district has neither coal nor water power resources in the vicinity.

It is understood that the proposed Soviet steel plant would produce rails, wheels, and structural steel products and the Russians have been quoted as saying that if their offer is accepted they could reduce the normal construction period to four to five years by as much as eighteen months to two years. So far as is known, the question of finance has not been discussed but it is believed that the Russian plant would be taken over by the Indian Government.

Negotiations between the Indian Government and the British combine are only in the preliminary stages, so that it is difficult to know what will be the ultimate outcome. An earlier British offer to supply a steel plant in association with Birla Brothers was rejected because the Indian Government wanted to control the industry. India's insistence on controlling the steel industry arises from the industrial policy laid down in a statement of policy in 1948, in which it was stated that the establishment of new undertakings in coal, iron and steel, aircraft manufacture, shipbuilding, mineral oil industry, and equipment for communications were the exclusive responsibility of the State except where, in the national interest, it was found necessary to secure the co-operation of private enterprise. Indeed, this latter arrangement was resorted to in the case of the oil refineries, recently constructed, which have been protected against nationalization for a period of twenty-five years.

If the British offer is accepted, it seems likely that the plant will be operated jointly by private and public enterprise; with the Indian Government holding the major portion of the issued capital.

Silver in 1954

Stability was the outstanding characteristic of world silver markets throughout 1954, Messrs. Handy and Harman stated in their annual review of the silver market published earlier this week.

The demand for silver in the United States last year totalled 85,000,000 ounces, a drop of 19 per cent from 1953 and representing the lowest level of trade demand since 1941. Be that as it may, the silver price of 85.25 cents per troy ounce, established on January 16, 1953, remained at that level throughout the year. This unusual stability, moreover, was maintained under essentially free market conditions although the price was subject to considerable indirect influences by the policies of the Mexican and the U.S. Governments.

The London silver market was only slightly less stable, the spread between the high and low amounting to a mere 2⅛d. per troy ounce for prompt delivery London, or a low of 72d. and a high of 74⅛d. Even so, this small fluctuation was due to the heavy sales of Russian silver in April and May, which forced the market price down from its opening level of around 73⅜d. to 72⅛d. per troy ounce. Immediately Russian sales ceased the price recovered. But when additional sales from the same source were made in July the London market again eased, this time to the year's lowest point of 72d. per ounce on July 21. However, steady recovery followed and on October 15 the price rose to its peak for the year of 74⅛d. per ounce and the market closed firm at the year end at 74⅛d. per ounce.

The stability of the silver market was again attributed to the market policies followed by The Bank of Mexico, which throughout the year maintained its established policy of buying Mexican production as offered and of selling freely to buyers both here and abroad.

Messrs. Handy and Harman in their review demonstrate how Mexico is able to dominate the market. The United States and Mexico are the two largest silver producing countries in the world. But as the U.S. production is absorbed entirely by the Treasury, the New York market depends on supplies from Mexico for a substantial proportion of its requirements. Thus through buying and selling its own output in response to changing conditions Mexico can adjust the supply position with a high degree of accuracy. The review points out that The Bank of Mexico last year did not find it necessary to accumulate silver during 1954 in order to achieve its objective. In fact, the Bank on balance was actually a seller by a small margin.

Of particular interest to the world's silver industry is the position concerning lend-lease silver. During the year the Netherlands delivered about 11,000,000 ounces against their total lend-lease obligations amounting to a total of 56,700,000 ounces. Otherwise the position is unchanged with approximately 400,000,000 ounces still outstanding and which is due to be repaid in April 1957. On the other hand, the review confirms that the Indian Government has on hand a stock of silver of approximately 300,000,000 ounces, or more than enough to take care of its obligation which is recorded at 226,000,000 ounces. Most of the Indian silver is in the form of demontized coin and a refinery is under construction at Calcutta which will be used to extract the silver content.

In discussing market prospects for 1955 Messrs. Handy and Harman look for continued stability. An improvement in trade demand is anticipated, but supplies are not expected to fall short of requirements. Once again, however, the review emphasizes that the estimate of the silver situation during the coming year is subject to legislative developments in Washington and to any change of policy on the part of Mexico.

Canada

(From Our Own Correspondent)

Sudbury, December 18.

Mining associations across Canada are urging upon the Canadian government a continuation of the Emergency Gold Mining Assistant Act. The EGMA expired at the end of the 1954 calendar year, and it has been the custom to renew the Act on an annual basis. It is now being urged that a renewal be made for a period of three years, and thus establish a greater degree of stability in the hard-pressed gold mining industry.

EXPENDITURE ON URANIUM

The rapid rate at which uranium ore is being revealed in the Blind River area of Northern Ontario is indicative of a major source of the vital element in the making. Because the uranium occurs in flat-dipping beds of conglomerate the mining of the deposits may be carried miles in depth down the dip and not restricted to the depth limitations as in the case of vertical deposits. Plans for preliminary financing involve an aggregate of close to $80,000,000, with close to 65 per cent of that amount being accounted for by the two major enterprises so far established, namely, Algom Uranium Mines, and Pronto Uranium Mines. In addition, there are numerous organizations with property in the Blind River field which have raised amounts ranging from $100,000 to $1,000,000 for exploration and development. Some of these less advanced enterprises have intersected important deposits and with indications of increasing scope of development.

Estimates prepared by a competent authority for *The Mining Journal* have suggested that the costs of recovering uranium oxide from deposits in the Blind River area of Northern Ontario will be between $10 and $11 per ton of ore treated. With the ore in the field carrying average values of $15 to $20 per ton, the margin of profit promises to be high.

DEVELOPMENT ACTIVITIES

Algom Uranium is in course of sinking a shaft to 800 ft. vertical on its Quirk Lake group designed to give outlet to ore in sufficient volume to accommodate a plant of 3,000 tons daily capacity. This same company has also let a contract for a five-compartment shaft on its Lake Nordic group, to an initial depth of 800 ft. and also designed to provide an additional 3,000 tons daily for a plant at that point. Financing under discussion may involve close to $40,000,000 anticipated expenditure in bringing about production at an aggregate rate of 6,000 tons daily. The largest holder of stock in Algom Uranium is Preston East Dome Mines. Ore so far indicated in these two properties of Algom Uranium exceeds 13,600,000 tons. These estimates embrace only a comparatively shallow slope depth of 900 to 1,200 ft.

Consoliated Denison Uranium Mines has intersected the continuation of the uranium-bearing conglomerate deposits on the slope dip from the adjoining Algom Uranium. The latest drill core intersected 10 ft. in thickness carrying values of $12.03 per ton at a vertical depth of 1,360 ft., and a further deposit of over 12 ft. thickness carrying $20.30 per ton at a depth of 1,500 ft. The company has some $1,200,000 in its treasury and is carrying on a detailed programme of work on its property embracing several miles in length.

Brunswick Mining and Smelting Corporation will have its pilot plant of 150 tons per day in operation by early February. A substantial share-interest has been purchased in the company by English and Continental interests. Added to the board of directors are representatives of Societe Generale de Minerals and Rio Tinto Co. Ltd.

International Nickel Co. of Canada is developing still another nickel mine, this time in Northern Manitoba at Moak Lake some 450 miles north from Winnipeg. A shaft is to be put down 1,400 ft., and plans are afoot for 10,000 ft. of crosscutting and drifting. Diamond drilling has indicated low grade ore amounting to 50,000,000 tons and carrying less than one per cent nickel.

Shipments of iron ore from the new iron ranges under development in northern Quebec and Labrador exceeded 2,000,000 tons delivered to tidewater over the new 360 mile railway, of which 1,800,000 tons has reached steel mills in the United States and Canada. This augurs well for the coming year, the objective for 1955 being 6,000,000 tons.

Opemiska Copper Mines, controlled by Ventures Ltd., has demonstrated the merit of the Chibougamau mining district of northern Quebec. The mine produced $3,918,000 in the first eleven months of operation and realized $1,200,000 net profit. The plant is operating at 400 tons daily. The ore is high grade and is yielding a profit of close to $10 per ton.

OIL AND GAS SUPPLY

New oil wells are being brought in at a rapid rate in western Canada. Sixty-two have been drilled during the past week (at date of writing) and an additional 49 new locations either started drilling or staked out for drilling. Of the 62 previously mentioned, 41 were oil producers, three were potential gas producers and 18 were abandonments. Daily average production of petroleum in the province of Alberta is 227,500 bbl.

Agreements have been signed between Westcoast Transmission Company, Pacific Northwest, and El Paso Natural Gas Co. which will bring about the flow of gas from the Peace River field to the markets of British Columbia as well as the United States. The overall joint plan will involve the expenditure of some $400,000,000. Westcoast Transmission Co. is endeavouring to complete financial arrangements by July 15, 1955, and to commence construction by September 15, 1955. The objective is to deliver gas to Vancover by the end of 1956.

Drilling for petroleum in the provinces of Saskatchewan and Manitoba to time of writing has shown an increase of 10 per cent over that of the preceding year. In the first nine months of 1954, 554 wells were drilled in Saskatchewan and 192 in Manitoba.

HEALTHY INVESTMENT CLIMATE

It has been announced from Ottawa that the Canadian government has no plan in view to impose taxation on capital gains in the country. The government holds to the opinion that investment in the growing industries of the nation should be encouraged and that therefore there must be no act that would classify profits due to appreciation of investments as income. It is widely recognized that this policy is an outstanding factor in inducing investors to participate in expanding industries.

Although foreign capital is flowing in great volume into new enterprises in Canada, the fact remains that Canadians themselves continue to maintain their own overall high preponderance of capital invested in the industrial pursuits of the nation.

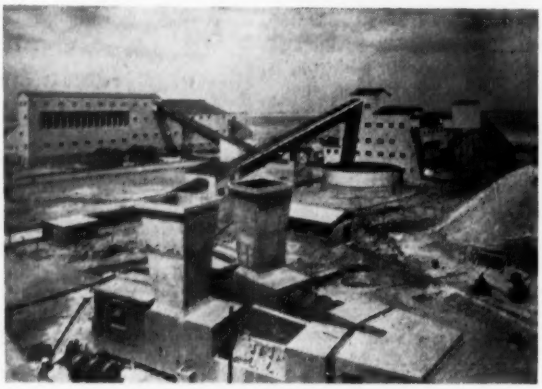
The accumulating new enterprises of magnitude throughout the country, together with the steadily increasing population have combined to create a high degree of confidence throughout Canada for many years ahead.

S.A. MINING TRENDS—IX

Current Mining Practice at Free State Mines of the Anglo American Corporation Group

The seven Orange Free State mines of the Anglo American Corporation of South Africa Group are situated in what is known as the Odendaalsrus Sector of the field. Welkom Gold Mining Company came into production in December, 1951—the first mine in the Group to do so, since which time it has been joined by Western Holdings, President Brand, and President Steyn. Loraine will most likely be the next mine in the Group to come into production followed by Free State Geduld and, at a later date, by Jeannette. With the exception of Jeannette all of these mines have become scheduled uranium producers. In the following article, which has been specially contributed to *The Mining Journal* by a South African correspondent, a description of the shaft system used by the mines in the Group prefaces reference to the geological conditions prevailing in the Odendaalsrus Sector and, finally, concludes with the steps the companies in the Group are taking to derive the greatest possible benefit from the local conditions. In next week's issue the concluding instalment of this article dealing with the mines in the Anglo American Corporation Group will be published, which will complete the series of eight articles describing current mining practice in at least one mine in each of the chief South African groups.

All the shafts of the Free State mines of the Anglo American group with the exception of the No. 2B Circular Shaft at the Jeannette Mine, are vertical, rectangular—46½ by 10 ft., with seven compartments. Five of these are downcast, one being a service compartment, and four hoisting compartments, of which two are equipped with 7-ton skips and two with man-cages interchangeable with skips. The remaining two compartments are bratticed off by a concrete wall and are connected with exhaust fans on the surface. Instead of the usual setts, the hoisting compartments are fitted with steel buntons. The hoisting capacity of each of the rectangular shafts will allow for operations at about 120,000 tons a month.



The reduction plant at Western Holdings

The No. 2B Jeannette Shaft is about 9,750 ft. south of No. 1 Shaft, is 18 ft. diameter and is concrete-lined. Eventually the No. 2B will be the ventilation upcast component of a twin-shaft system. The hoisting component will be sunk in due course from a site about 150 ft. away from No. 2B and will be a vertical, circular—from 22 to 25 ft. diameter, concrete-lined shaft.

The two Free State Geduld shafts are about 8,000 ft. apart on dip; the two Loraine shafts about 7,600 ft. apart on strike; the two President Brand shafts about 10,050 ft. apart on strike; the two President Steyn shafts about 9,875 ft. apart on strike; the two Welkom shafts about 7,000 ft. apart on strike; and the two Western Holdings shafts about 7,000 ft. apart on strike. The shafts have been connected by a haulage in the case of Welkom, by twin haulages in the case of President Steyn and Western Holdings. While it is the intention to advance twin interconnected haulages over the whole distance between shafts in the case of the other mines, localized geological anomalies may at places make it necessary to merge the two headings and to diverge when ground conditions again are favourable.

O.F.S. TEMPERATURE GRADIENT

The temperature gradient in the Free State field is relatively high, and twin haulages counter this by providing the increased ventilation flow required. They also facilitate a relatively rapid advance under the geological conditions obtaining in the Odendaalsrus Sector of the field, by making multi-blasting operations possible. In other words, twin haulages contribute to the reduction to a minimum of the operating cycle of drilling, charging, blasting, re-entry, and cleaning, and permit the rapid succession of operating cycles.

In the connecting as well as the level haulages, the drag round is drilled by jack-hammers and air-legs operated from drilling platforms and from the haulage floors. The rock in the ends is broken by electric blasting. Cleaning is by mechanical loaders with hand-lashing removing the remaining fines. The broken rock is loaded into and trammed in 4-ton hoppers hauled by electric and Diesel locos.

Steel headframes have been erected at all the shafts. A feature of the bank layout is the provision of man-loading levels or sub-banks, generally about 17 ft. below the banks. These sub-banks are separately connected with the European change-houses and the native hostels by enclosed tunnels. The latter provide conditions which reduce the incidence of pneumonia (to which natives in particular are susceptible) and which facilitate control and supervision.

THE ODENDAALSRUS SECTOR

The Free State mines of the Anglo American group are all located in what is termed the Odendaalsrus Sector of the field. Local conditions in the Sector militate against a very high rate of development. Faulting is relatively extensive, and commensurate with this is the incidence of water-bearing fissures which are usually associated with fault planes and dyke contacts, and there are the impediments of numerous parting planes in the hanging-wall and of the khaki shale varying from a few inches (in sections it does not occur at all) to some feet and parted from the Basal Reef on the hanging-wall side by a quartzite band ranging from a few inches to a few feet. Dykes are not unknown. The relatively high temperature gradient must also be considered. In the northern section of the Sector,

that is in the Loraine and, as far as can be judged, in the Jeannette property, there is a marked mitigation of these adverse conditions and operations have accordingly benefited.

A mechanical loader in operation in a Welkom development end

To counter the adverse conditions mentioned and to achieve the highest possible rate of development, the general plan for opening up the orebodies of the seven mines follows a common pattern but is sufficiently flexible to permit modification for and adaption to local variations that require changes of methods. The common pattern is to advance twin interconnected haulages in the footwall on alternate levels (with single footwall haulages on the intermediate levels), the haulage nearer the reef usually being the intake for ventilation and that further from the reef usually being the return. In the deeper levels, where a greater ventilation flow is required, twin interconnected haulages are driven on each level.

The ventilation circuit is understandably variable, but usually takes the course from the intake on one level, up through the workings, and into the next higher haulage or as the case may be, into the next higher return haulage. In the deeper levels, the normal ventilation flow will be supplemented by refrigeration. Crosscuts are driven from the haulage, single or intake as the case may be, to the reef, and raises are cut to the level above, initially at strike intervals of about 300 ft. and later of about 500 ft. The reef faces thereby exposed are termed the stope faces or backs, and are sub-divided by gully-tracks advanced from the raises. The dip intervals between the gullies are usually from 150 to 200 ft. The faces between the gullies are termed scraper-faces or backs.

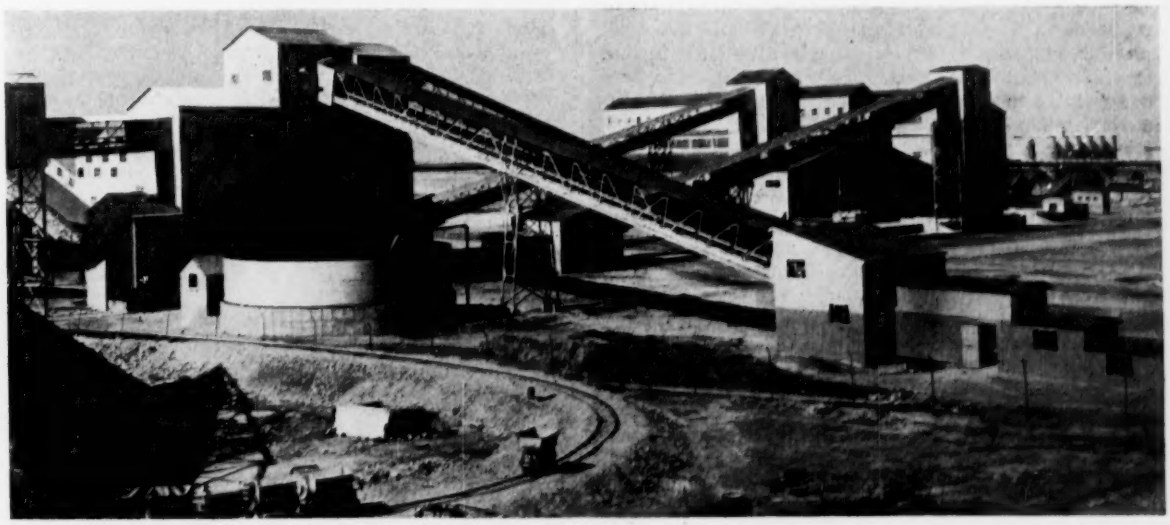
LONGWALL UNDERCUTTING STOPING AS PLANNED METHOD

Unless necessitated by localized conditions, there are and will be no reef-drives. As far as possible, longwall undercutting stoping is and will be employed. In places, where the khaki shale band is wide and/or cannot be adequately held by the quartzite parting, it may be necessary to resue. Other methods are continuously being investigated. For the time being, the charged stope blast holes are fired by ordinary fuses and by igniter cord. When adequate supplies become available, only the latter will be used.

The average dip of the reef is estimated at about 28 deg. The broken stope ore is mechanically scraped down to end-tipping cars in the gullies and these cars are trammed to and discharge into boxholes leading down to the footwall crosscuts. The ore fines not removed by the scrapers are swept dry down to the gully cars. In places, tramming in the gullies is replaced by strike scraping. From the footwall crosscuts, the ore is hauled to the shaft pass-system in 4-ton hoppers by 10-ton electric or diesel locos.

REEF RAISES WILL BE THE MAJOR SOURCE OF DEVELOPMENT ROCK

Thus, to a large extent, the reef raises will be the major source of development rock, the tonnage of the latter available for milling in the initial stages will not be large; nor will it be a very significant proportion of the total mill feed once sufficient tonnages become available from the stopes for maximum milling rates. It seems obvious that once the footwall haulages have been sufficiently advanced and/or an adequate number of haulage ends are being carried forward, stoping at a sufficiently high rate to maintain the reduction plant at the required production rate will be effected. The grade milled depends of course, on the stoping width and the extent to which selective mining can be and is practised. Without a doubt, every effort is being made to raise the grade to the economic optimum in the shortest possible time. In mining, this does not mean overnight.



A general view of the reduction plant at President Brand.

U.K. Coal Mining Developments

With an eye to a possible coal shortage Britain has contracted with several countries for the import of coal and a recently announced order is for the shipping of 100,000 tons of Canadian coal to Britain during the next three months. Also from North America comes the news of an agreement between the U.K. and U.S. governments authorizing purchase of American coal for payment in sterling under the United States Mutual Security Act 1954. Details are still to be worked out, but it is understood that $2,500,000 has been allocated, this representing about 250,000 tons of coal according to our coal correspondent.

The long anticipated agreement between the U.S. and the European Coal and Steel Community was signed on December 21. Whilst not committing the U.K. to the full membership favoured by the Community with consequent supranational authority, the new agreement will promote close co-operation between the two parties and should contribute to the common prosperity and unity of Europe.

That the European Coal and Steel Pool is making headway is stressed by M. Jean Monnet in a recent progress report. M. Monnet, retiring President of the High Authority, reports that trade in hard coal between member States is now 40 per cent higher than in 1952 when the Community came into being. On the whole, prices had been maintained at the level established at the beginning of the year and combined output is now approximately 240,000,000 tonnes per year. Despite the progress made by the Community the demand for coal in Europe is likely to exceed supply early in 1955.

WATER INFUSION/BLASTING TECHNIQUE

The British Safety in Mines Research Establishment of the Ministry of Fuel and Power has issued the 32nd annual report from which the following features are noteworthy.

The technique of combined water infusion/blasting is receiving considerable attention and stress is being placed on its possible use for softening solid coal prior to extraction by machines such as the coal plough. The possibility of applying the water infusion/blasting technique to rock headings is under consideration. Whilst on the topic of blasting an interesting innovation is the development of a special cartridge by the manufactururs of Hydrox enabling the shells to be re-charged underground. This is a welcome development as one of the chief objections to this type of blasting is the necessity to return the rather unwieldy shells to the surface for reloading. With the new method the gas producing composition, its igniter and primer, are assembled in a conveniently sized cartridge suitable for rapid insertion underground. The shell has been modified so that hand tightening of the head is sufficient. Tests carried out on the cartridges in methane/air mixtures failed to cause ignition.

The difficulty of maintaining a conveyor road reasonably free from coal dust is emphasized and means taken to achieve this end are discussed. These include the giant "vacuum cleaner" devised by the N.C.B. but this implement still does not afford a satisfactory solution and is open to criticism. An interesting example of electrostatic sparking on a belt conveyor is mentioned in the report. In this incident a static charge on a rubber covered roller was picked up by a metal belt fastener and thence discharged to the nearest earthed point. Fortunately, the conveyor was in the manufacturer's workshop when the incident occurred as the spark appeared to be of sufficient intensity to ignite gas.

Mining in Brazil during 1954

The year 1954 was one of exceptional mining activity in Brazil. During the first ten months the Department of Mineral Production (DNPM) received 372 applications for licences to prospect, granted 301, issued 80 concessions to exploit deposits, and registered 52 new mining companies.

Holders of prospecting licences are allowed a maximum of four years to complete their investigations and twelve months to start extracting if the DNPM considers the results justify a mining concession. Approximately 25 per cent of applicants for prospecting licences have obtained mining concessions in recent years.

Concessions granted in 1954 include 21 in Minas Geraes, 19 in Sao Paulo, 7 in Rio Grande do Sul, 6 in Rio de Janeiro and four each in Espirito Santo, Paraiba and Parana. Among the new mines opened up are two iron, two cassiterite and three manganese in Minas Geraes ; one gold and two scheelite in Paraiba, and one scheelite in Rio Grande do Norte ; three ilmenite and one monazite in Espirito Santo ; one cassiterite in Rio Grande do Sul ; one lead in Santa Catarina ; one quartz in the Federal District and one calcium phosphates in Fernando Noronha.

A company has been formed to exploit the recently-discovered phosphorite deposits of Olinda, Pernambuco. Reserves are estimated at 50,000,000 tons and the first consignments of pulverized phosphates are now being shipped.

NEW LEAD MINE AT SANTA CATARINA

The reserves of the new lead mine at Blumenau, Santa Catarina, are estimated at 1,000,000 tons of galena, workable to a maximum depth of 60 metres. The ore is being processed by Cia. de Mineracao Sul-Brasileira. Apart from the Sao Paulo and Parana deposits, referred to in *The Mining Journal* of May 14, 1954, other occurrences have been located at Altamira and Alemquer (Para), Serra das Cabacas (Paraiba), Morro do Gomes (Bahia), Sete Lagoas, Januaria and Tiros, in Minas Geraes.

Consorcio Metalurgica do Brasil is now being organized to take over the properties of Niquel Brasileiro S.A., exploit the mines at Ipanema, Minas Geraes, and produce metallic nickel, nickel salts and alloys. American engineers are installing plant to work with hydrogen, obtained by electrolysis from water. The ore will be reduced at 500 deg. C.

Brazil's most important deposit of fluorspar is now being mined at Campo Alegre, Bahia. The exploiting company, with limited financial resources and obsolete equipment, had extracted 2,000 tons of high-grade ore by the end of 1954, but transportation difficulties and primitive mining processes have raised the cost above that of imported fluorspar. Interested parties are now trying to have imports transferred from Category 1 to 3, which would practically double the premium on exchange certificates. The reserves, which cover a large area and have only been roughly estimated, are believed to be more than adequate for Brazil's needs during the next hundred years and in addition leaving a margin for exportation.

Two aerial survey companies, employed by the Nationa Research Council, have discovered occurrences of thorium and uranium minerals at Pocos de Caldas and Araxa, Minas Geraes, on the Espirito Santo coast and in Rio Grande do Norte. The Council has received a grant of land at Pocos de Caldas from the State Government to instal plant for the chemical treatment of uranium.

DNPM geologists have also found new occurrences of monazite, tantalite, hubnerite, columbite, beryllium, bismuth and apatite in North Brazil and thorite at Massaranduba, Santa Catarina.

New Deep Test Well for Oil at Mafia Island, Tanganyika

The geological formations underlying Mafia Island, off the coast of Tanganyika, and a comparison of these structures in relation to those of the mainland, give rise to hopes that Mafia or other islands in the vicinity may prove to contain oil-bearing sediments. During the closing weeks of December, 1954, a deep test well was spudded in on the island, the first test well in East Africa, and sunk by the D'Arcy-Shell Petroleum Development Company of Tanganyika Ltd. The following article, recently received from our East African correspondent, describes the installation of the well equipment and points out that if the Mafia well establishes the presence of oil or gas in even small quantities, the operation will be considered successful.

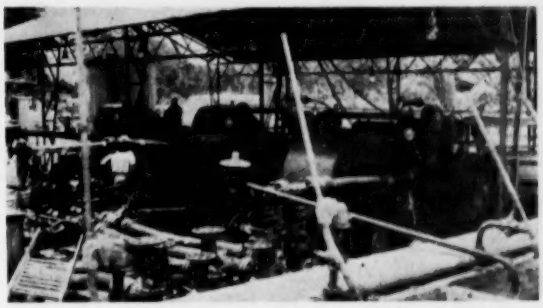
In the closing weeks of December the first deep test oil well in East Africa was spudded in on the island of Mafia, off the coast of Tanganyika and approximately 70 air miles to the south of Dar-es-Salaam. The Mafia well is being sunk by the D'Arcy-Shell Petroleum Development Company of Tanganyika Ltd., and the machinery was put into operation by His Excellency the Governor of Tanganyika, Sir Edward Twining, G.C.M.G., M.B.E.

It will be recalled that during May, 1954, it was reported that the D'Arcy Exploration and the Shell Overseas Exploration Companies were investigating the coast of Tanganyika as a possible source of oil supply. After a general survey, attention was centred on the chain of islands off the coast, and at that time it was decided to drill a deep test well on Mafia Island.

PROMISING SITE

Mafia Island has been chosen as the site of the first hole because geological surveys have shown that on the coast of Tanganyika the sediments increase in thickness towards the east, that is, the further removed from the granites and gneisses of the interior. Moreover, the thickness of tertiary sediments is found to be greater towards the south. Seismic sounding has shown that at Mafia there is a very great depth of sediments and that the island is the expression of an underlying anticlinal structure with three subsidiary culminations. The drill hole now commenced is situated over the centre of one of these.

The derrick and drilling platform



The three mud pumps each driven by a 400 h.p. diesel engine

A great deal of work has been done in preparation for this event. To get the 3,500 tons of equipment to the site in the thick bush of the island a converted landing craft was purchased, a floating quay constructed, and 7½ miles of tarmac road laid down. The bush was cleared, wells were sunk for water, and houses put up for the staff of 30 Europeans and the labour force of over 200.

DRILLING EQUIPMENT

Work on the foundations for the derrick, a National 100, started in August, 1954, and in 3½ months the 160 ft. high structure and its accessory equipment was ready for the spudding in. The drilling equipment includes five diesel engines, each of 400 h.p., two for operating the drill and three for driving pumps for the circulation of the drilling mud. There are vibrating screens for the separation of the chippings from the mud, storage tanks, and a generating station containing three 375 kW. units for lighting and the auxiliary services. The workshop contains a long lathe capable of taking a 40 ft. Kelly bar.

The starting diameter of the hole is 23 in., and a casing of this size will be cemented in to 500 ft. depth. The hole will then be continued at 17½ in. dia., with progressive reductions to a final diameter of 8 in. The rig is capable of drilling to 12,000 ft. depth.

It was stressed in the speeches which formed part of the opening ceremony that, because it had been decided to spend large sums in sinking an oil well to 10,000 ft. or more, it must not be assumed that it would strike oil. Mr. Eager, the general manager of the company, stated that on the contrary only one hole in every four drilled struck oil in commercial quantities. "If this hole finds promising conditions at depth and establishes the existence of oil or gas, even in small quantities, it will have served its purpose at this stage," he said. Nevertheless, the conditions appear to be quite promising, if not for this hole then for the others which will follow it.

Three New Machines Speed Mining Production

A marked feature of mining development since the second world war has been the trend to increase production by the use of larger machinery giving greater outputs and faster speeds. As an example of this trend, reports in *The Mining Journal* of January 7, 1955, described how two existing tunnelling records had been broken in South Africa and Scotland.

EIMCO ROCKER SHOVELS IN RECORD BREAKING OPERATIONS

The new South African record was established during November-December last year, when a mining crew at Harmony Gold Mining Company cut 1,305 ft. of straight development work plus 87 ft. of subsidiary work in 26 working days. The European record was broken during

The Eimco 21 Rocker shovel at the St. Fillan section

seven working days in December on the St. Fillans section of the North of Scotland Hydro-Electric Board, Breadalbane Project, when a 10 ft. dia. tunnel was advanced 428 ft. through very hard epidiorite rock.

On both these operations Eimco Rocker shovels were essential units of equipment, a Model 40 being used at Harmony and a Model 21 at Breadalbane.

The Eimco Rocker shovel has been used on most of the noteworthy tunnelling contracts in the United Kingdom, as well as on the Continent and in the United States. The machine is a fast and rugged overhead loader capable of a sustained output of up to 2 tons per min. The Rocker shovel digs into the material and swings the load overhead in a seven second loading cycle, and the unit is powered by two heavy duty five-cylinder radial type air motors.

GIANT UNDERGROUND DIESEL-ELECTRIC LOCO

This trend towards larger and faster mining equipment is very marked in the United States, and in this connection two new "giant" machines have recently been reported. One is a powerful diesel electric underground haulage locomotive and the other an armoured mill motor.

The U.S. General Electric locomotive

The locomotive is in operation at the U.S. Potash mine at Carlsbad, New Mexico. The locomotive, not much higher than a motor car, is said to be the most powerful underground diesel-electric in the world, and was built by the (U.S.) General Electric Company. This unit, built for high underground speeds in haulage ways, can travel 37.5 miles per hour and its length and weight probably make it the largest underground diesel-electric built to date. The 420 h.p. machine weighs 40 tons.

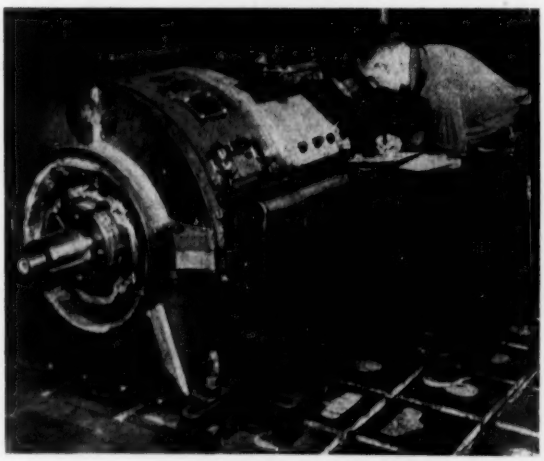
The new unit was constructed because it was necessary to accomplish underground work at Carlsbad without locomotive units in tandem. The Potash locomotive is capable of pulling 800 to 1,000 tons of rock load on a level track, depending on track conditions.

NEW 500 H.P. ARMOURED MILL MOTOR

Specially designed and tested for heavy-duty work in mining and steel mill applications, a new 500 h.p. armoured mill motor has been developed by the General Electric Company, United States.

The new motor incorporates a universal enclosure, which makes possible five systems of ventilation and protection by substituting different types of covers on the frame openings. To lessen the possibility of damage to the coils and fan when the armature is removed, feet have been added to the frame heads for armature support. Connections between halves of the motor outside the frame provide easier accessibility, while an armature spider has been installed to provide for replacement of the shaft.

The motor is already in wide use in the large power shovel field, and is expected to find many applications in the driving of hoists and ore unloaders in coal and ore mining operations.



The new 500 h.p. armoured mill motor

The British Thomson-Houston Company in 1954

During 1954 an increase in the mechanization programme of the National Coal Board necessitated expansion of electrical distribution systems both on surface and underground, coupled with the continuance of formidable winder projects already envisaged. The British Thomson-Houston Co. Ltd. played a big part in pursuance of this expansion policy and in addition supplied various equipments to metalliferous mines overseas.

During 1954 all types of electrical equipment for the mining industry were delivered and installed. These units included mining transformers and portable substations rated at 150 kVA and 250 kVA, surface and underground switchboards, and motors and control gear for the more conventional mining applications. Included in the latter were electrical equipments for cable belt conveyors, including installations rated at 420 h.p. and 275 h.p. operating at 3,300 v. During the year additional electrically-controlled mine car handling installations were completed and thrustor-operated airlock doors installed.

WINDER EQUIPMENTS

Several winder equipments were despatched or commissioned during 1954, ranging from the 450 h.p. A.C. geared equipment installed at Geevor Tin Mines in Cornwall to the two 3,500 h.p. A.C. winders to be installed 5,000 ft. underground at Venterspost Gold Mining Co., South Africa. Winders have recently been commissioned for service in Australia and with several divisions of the N.C.B.

Early in 1954 the 750 h.p. closed loop, amplidyne-controlled Ward-Leonard winder for Mount Isa Mines, Australia, was given a combined test at the Rugby works of B.T.H. and is being erected on site. Most of the electrical equipment for the two 2,500 h.p. Ward-Leonard winders, also equipped with amplidyne closed loop control for Hem Heath Colliery, North Staffs, has been manufactured and tested and is awaiting erection on site. The winder orders received during 1954 include some twenty equipments ranging from 70 h.p. to 2,350 h.p.

In the winder field, perhaps the most interesting development of 1954 was the increased trend towards multi-rope friction or Koepe winding, not only in the United Kingdom but in South Africa, Canada and other areas where deep-level mining operations are carried out. The company has in hand several orders for friction winders, and a considerable amount of effort is being devoted to improving the technique of Koepe winding practice. This is particularly true where automatic winding installations are contemplated and where accuracy of decking is still important.

FLAMEPROOF SAFETY MOTORS

The British Thomson-Houston Company is playing an active part in the introduction to mines in the United Kingdom of certain coal ploughs, and face and roadway conveyors, of Continental manufacture. The various motors of these coal face ploughs and conveyors must conform to the stringent requirements of the Coal Mines Act when used in British collieries. To meet this need the manufacturers have developed flameproof motors, the special features of which include both flange and foot mountings to suit the alternative positions provided on the mechanical drive heads.

REVIEWS

The Northern Miner Annual Review Number. *Published by The Northern Miner. Pp. 128 in eleven sections, with maps and illustrations. Price 20 c.*

Once again *The Northern Miner Annual Review Number* provides a comprehensive picture of the rapid developments which took place in the Canadian mining industry during 1954. The tone of this year's review number is of sensible optimism, for in spite of lower prices and lessened demand for some minerals, output for last year will far exceed the record of $1,330,000,000,000 established in 1953.

During 1954 all-time production records were set in so far as nickel, copper, petroleum and iron ore were concerned and futher expansion is anticipated. Increased expansion may be expected from certain lesser metals, while demand for copper has outstripped production. In addition to the development of the individual metals, many new mines are approaching production and established producers are expanding their operations. Perhaps the most significant events of 1954, however, were the major developments in New Brunswick, the opening of Blind River and Bancroft uranium areas and the Manitouwadge copper-zinc development in Ontario, the Beaverlodge uranium property in Saskatchewan, and the major lead-zinc camp currently taking shape at Pine Point in the North-west Territories.

Apart from articles dealing with matters of general interest and those reviewing the specific developments of the past year, this Annual Review Number deals in turn with Canadian minerals, the growth of the Arctic, metallurgy, the industrial aspect of the mining industry, geological surveying and the financial viewpoint. In fact, every aspect of the Canadian mining industry is completely represented. In all, *The Northern Miner Annual Review Number* is a valuable work which provides interesting reading matter long after its publication day has passed.

Jahrbuch des Deutschen Bergbaus 1954. *Edited by Dr. Ing. W. de la Sauce, Paul Schorn and Emil Schrödter, Essen, 1954. Published by Glückauf, pp. 1,434. Price DM20.*

This Year Book of the German mining industry is published in Essen, where the Second International Mining Exhibition took place in September, 1954. It contains large sections listing names of institutions and individuals, professional and commercial organizations, and allied associations engaged in the mining industry in Germany to-day, and shows the rapid development of the industry in the country compared with its position at the time of the last mining exhibition held at Essen in 1948.

Much valuable statistical information illustrates the vast rehabilitation which has taken place in all branches of mining since the war. The Year Book contains accounts of developments in technology, economics and safety measures, etc., presented at a very high level, which should prove invaluable not only to those interested in the mining industry in Germany, but to all considering seriously the wider problems of mining in Europe to-day.

A Dictionary of Geology, *by G. W. Himus, Ph.D., F.G.S. Published by Penguin Books. Pp. 153. Illustrated. Price 2s.*

The purpose of this dictionary is to interpret the special language of geology to the general reader, and in that it is successful. Each entry constitutes what in effect is an essay in precis, so that the whole presents a clear and concise description of geological phraseology. The illustrations in line and half tone enhance the value of a useful handbook.

MACHINERY AND EQUIPMENT

A Deep Rock Drill

The Halco-Stenuick deep rock drill has been tested in hard rock quarries in Belgium and is now being manufactured in the United Kingdom by the Halifax Tool Co. Ltd. These manufacturers have the selling rights for the U.K. and the Dominions.

The Halco-Stenuick deep rock drill is a percussive unit and in its operating principle allows no intermediate linkage to absorb energy between the hammer and bit, as the hammer is located between the rods and the bit and thus does not transmit the blow through a string of rods to the bit as is the case in more standard practice. These rods are 9 ft. long, 2¼ in. in diameter and weigh 39 lb., while the hammer assembly weighs 70 lb. It is stated by the manufacturers that vertical holes 4 in. in diameter and a maximum of 150 ft. depth can be drilled with no reduction in speeds ranging from 20 ft. per hour in soft rock or shale to 6 ft. per hour in hard rock. Average air consumption is 75 cu. ft. per minute at 70 lb. p.s.i. One driller can operate several machines.

The hammer assembly consists of a 2 in. piston with a stroke of 5½ in. in a steel cylinder of 3¼ in. external diameter. The hammer assembly incorporates a shock obsorber, while the cruciform bit uses tungsten carbide inserts. The guaranteed life footage of the bit is 400 ft., the approximate usage gained in hard rock drilling, although in certain formations footages as great as 1,400 ft. have been claimed. The minimum footage between sharpenings is claimed to be 80 ft., while in the majority of instances it is possible to drill 150 ft. During drilling, exhaust air cools the bit and removes cuttings from the hole. The drilling assembly is rotated at varying speeds according to the texture of the strata being drilled and the string from rotating motor to bit is counterbalanced by adjustable weights.

The rig is 17 ft. high when mounted with boom vertical and 5 ft. of headroom is required when the assembly is lowered. The unit weighs 16 cwt. The drill is available only for vertical holes at present, but its adaption for horizontal drilling is under consideration.

Poland Buys U.K. Mining Locomotives

An order from Poland worth over £100,000 for fourteen battery operated mining locomotives has just been completed by The Clayton Equipment Co. Ltd. This single order is the largest of its kind from this source to be placed with a British manufacturer since the war.

Each locomotive has a working weight of 10 tons, normal and maximum draw bar pulls of 2,500 lb. and 5,000 lb. respectively and an average speed, under normal haulage conditions, of 6 m.p.h. Easily adjusted for use on 500 mm., or 600 mm., gauge track, each was supplied with duplicate 186-volt batteries of 90 Exide-Ironclad cells, type ILU17C, capacity 358 Ah at the 5-hour discharge rate. These batteries, equipped with tubular positive plates and separators of Porvic, a microporous plastic material, are fully approved by the Ministry of Fuel and Power for use in mines and hazardous atmospheres.

Of all-steel construction, the locomotives are built on a frame of steel plate securely braced and bolted for rigidity .The frame is cut away to accommodate the cast steel axle boxes which, machined to form a dust-proof housing for the bearings, slide on hardened steel renewable strips. Nickel chrome steel was used for the axles and the 24 in. cast steel wheels, fitted with renewable alloy steel tyres, are pressed and keyed on the axles and secured with nuts.

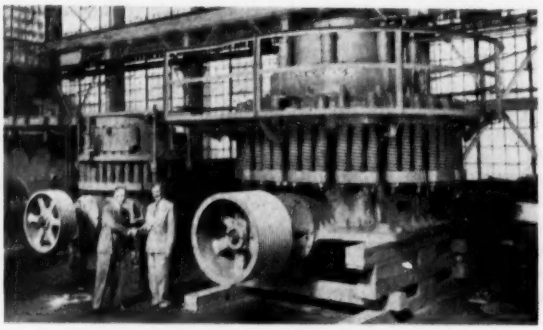
Each axle is driven by an independent motor through a worm reduction gear comprising a hardened and ground nickel steel worm and a phosphor bronze worm wheel running in ball bearings with a separate thrust bearing. The gear is housed in a cast steel case which serves as an oil bath and upon which the motor is flange mounted—the drive being transmitted through an alloy steel claw coupling. The 25 h.p., 180-volt series wound motors, also of Clayton manufacture, are of the totally enclosed flameproof traction type, fitted with ball bearings, one hour rated to B.S.S. 173, wound with asbestos insulated conductors to Class B requirements and double impregnated. A flameproof manually operated, cam contactor controller, equipped with a " dead man " handle, provides four series, four parallel and six rheostatic braking notches.

The brakes consist of cast iron shoes, acting on each of the four wheels, operated from the enclosed driver's compartment by a hand wheel driving a screw attached to a compensating crosshead. The system thus ensures that equal pressure is applied to each wheel. Four sand boxes are provided, operated by a hand lever, which sand the leading wheels according to the direction of travel. The Exide-Ironclad battery is housed in a ventilated steel container to Ministry of Fuel and Power requirements. A 100-ampere, double-pole, flameproof plug is provided, interlocked with the double-pole isolating switch and fuses.

This Polish order for mining locomotives is only one of several recently received by The Clayton Equipment Co. Ltd. from overseas customers. Contracts have just been placed or just completed for locomotives fitted with Exide-Ironclad batteries for Australia, India, South Africa, Tasmania and Yugoslavia.

Milestone in Crusher Construction

The production of the 5,000th Symons cone crusher has been announced by the Crusher Division of the Nordberg Manufacturing Company, United States. This crusher is one of 37 super heavy duty 7 ft. Symons cone crushers ordered to date by iron ore producers to process taconite in the north-central United States.



The Symons cone crusher No. 5,000

The manufacturers state that low-cost reduction crushing in Symons crushers has influenced the growth of basic industry and has played a part in increasd mineral production.

Impressive Roof Bolting Demonstration

An impressive and successful demonstration of the Holman Dryductor drill used in roof and floor bolting operations was given at a gypsum mine in Sussex on January 14, when a representative of *The Mining Journal* was afforded the opportunity of seeing the Short Dryductor Drill and the 404 Impact Wrench in operation.

The 55 lb. Short Dryductor Drill as used in the demonstration, is similar in external appearance and in size to a conventional 55 lb. hand-held rock drill and can be used as such or mounted on various mountings. The model delivers a faster and lighter blow than the earlier machine.

The 404 Impact Wrench demonstrated has an important application in bolting, particularly when used in conjunction with the Dryductor drill. Impacting commences when resistance to turning reaches a predetermined point and continues until the nut is either fully tightened or released. The impact mechanism of the 404 is of original design and the wrench is driven by the Holman 40 Cartridge Vane type motor.

METALS, MINERALS AND ALLOYS

COPPER.—On both sides of the Atlantic copper has been in short supply with demand for immediate consumption showing no signs of abating. The big American producers continue to hold their price of 30 c. per lb. New York in spite of the upward tug of prices of the free market. It is just possible that if the Chileans carry out their announced policy of shipping more copper to Europe the *coup de grâce* will have been given to the 30 c. level. Very little Chilean refined has been going to the United States anyway but the loss of the present supply of blister would be most serious in present circumstances. If in fact the 30 c. line could be held with the help of better supplies from Chile it is not entirely impossible that the Chilean government could be induced to reconsider its policy. Meanwhile the news that White Pine Copper, a subsidiary of Copper Range, has recently poured its first copper has not aroused the enthusiasm that it looked like doing two months ago. The fact is that all foreseeable increases in producion can easily be absorbed in the present tight supply situation. The White Pine orebody is potentially one of the biggest in North America; it has 309,000,000 tons of developed ore of 1.1 per cent copper and a rated capacity of 37,500 tons of refined copper a year.

The tightness of the present world supply was emphasized by the high production figures in the December statistics issued by the Copper Institute. U.S. refinery production was up on the month by 17,400 tons to 13,523 tons the largest output in the history of the industry. U.S. refined copper output for the year was 1,311,249 tons against 1,395,003 in 1953. The total of U.S. crude copper production at 97,806 tons for December was also the second highest on record surpassed only by 101,825 in March 1953. There was too a substantial delivery to domestic consumers at 119,626 tons and refinery stocks were also increased by 10,000 tons in December.

There is little news to report of the proposals for stabilizing copper prices in the United Kingdom although the various points of view are being actively canvassed. It is reported, however, that in addition to the talks between producers and consumers in London discussions are going in Africa between Rhodesian Selection Trust and Anglo-American.

It is unfortunate that the strike of African workers on the Copperbelt has persisted longer than was predicted or than the known opposition to the strike had suggested likely. The strike is now in its third week and the drift back to work appears to have slowed down. Furthermore, as a result of the strike 3,500 Africans normally employed at cutting wood for the mines (and who were not embroiled in the strike) have had to be laid off. The position at present is that hoisting and milling are proceeding on a limited scale at Mufulira and Nkana, and at Nkana a small amount of copper has been cast; Nchanga is now producing at about a third of its capacity; and Roan Antelope—where workers never stopped—is maintaining a production of about 100 tons of copper a day and shipping some of it as well. At Chibuluma where for 11 days the strike was 100 per cent effective a drift back to work has started.

Meanwhile it is reported that the African mine workers Union at Broken Hill has decided not to strike for the time being. It is further reported that European mine workers union of Northern Rhodesia is to send representatives to discuss African advancement with the South African Mine Workers Union. It is not known how, if at all, this meeting will influence the impeding compulsory ballot on African advancement.

LEAD.—There has been only moderate demand for lead in the United States although the New York price has remained at 15 c. per lb. Only stockpiling, however, sustains the price. General Services Administration has asked for the usual monthly offers of metal.

TIN.—Demand for tin in the United States has been barely steady and the price last week fluctuated at under 87 c. per lb. for grade A. Cheap sterling dealing continues to keep the United States well supplied to the detriment of United Kingdom traders. The only heartening news is the increasing number of reports of good business in the tinplate industry although some substantial part of the orders are believed not to be for consumption as an insurance against the period of wage negotiation in the steel industry which is expected in mid summer.

ZINC.—The feature of zinc trading in the United States has been the particularly keen demand for special high grade zinc at 13 c. on the basis of 11.50 c. per lb. East St. Louis. The high grade zinc is wanted for die casting, most of it for the motor car industry which is approaching a record rate of output but other industries have shown interest; most of the zinc is wanted for immediate delivery while there have been many enquiries for February metal. The enthusiasm has not spread to the other grades although there has been moderate interest in prime western. General Services Administration has asked for the usual monthly offers.

ALUMINIUM.—It was to be expected that the Canadian aluminium price would be advanced again following the increase in the U.S. domestic price reported here last week, which resulted in Canadian metal selling in the States at more than 2 c. below the new U.S. producers' price, duty paid of 21½ c. for pig and 23.2 c. for ingot metal. In the event, Aluminium Ltd. announced last week a 1 c. per lb. increase in the U.S. on its aluminium products effective as from January 14. The new Canadian prices apply to all orders received on and after January 14 but orders accepted prior to that date will be put through at the old price up to and including February 9. This latest price increase by Aluminium Ltd. follows its earlier increase of ¼ of a cent per lb. to its overseas customers, effective as from January 1 and reported in these columns in our issue of January 7.

The West German aluminium industry continues to expand. In 1953 output totalled 106,000 tons and this was expanded to 129,000 tons last year. But it is expected that the plant extensions commissioned during 1954 will raise the country's total output during the current year to 134,000 tons. Appreciable though the expansion has been over the last two years, consumption of aluminium per head in West Germany has only to attain a level equivalent to a shade over 6 lb. per head of population to absorb the whole of the 134,000 tons envisaged during the current year, so that the industrialists believe there is considerable scope for further growth of aluminium consumption in that country.

The Japan Light Metal Company has announced that it will supply the Aluminium Company of Canada, with which it is affiliated with 20,000 tons of alumina during 1955. The alumina will be shipped to Alcan's refinery at Kitimat and Japanese shipments will be raised to 30,000 tons of alumina in 1956.

To cope with these additional demands for export the Japan Light Metal Company are making arrangements to import an extra 40,000 tons of bauxite this year, probably from Malaya. The Japanese aluminium industry continues to prosper and it is hoped to expand exports of the metal to a level far greater than the 12,000 tons attained in the year ended March, 1954. Japan has also concluded a contract to export 1,000 tons of primary aluminium to the U.K.—the first shipment to this country of primary metal since 1952. A contract to export 2,000 tons of primary aluminium to Argentina in exchange for raw wool has also been concluded and, although enquiries from abroad for primary metal were increasing, the Japan Light Metal Association said that there was no intention of raising export prices in the foreseeable future.

MANGANESE.—Reports from Paris suggest that the decline in the price of manganese over the past year may seriously effect the production of Morrocan manganese during 1955. Buyers are now bidding Frs.200 to 220 per unit against Frs.350 to 400 a year ago. Production in 1954 was certainly heavy, total of output of ores for the first eight months of this year amounting to 271,000 tons compared with 294,000 tons for the whole of 1953. Of these figures 31,000 tons were for the chemical industry in the former case and 54,000 tons in the latter.

SELENIUM.—The selenium market remains very firm and home consumers have been finding difficulty in meeting re-

quirements. This has led to the U.K. price being raised to 43s. per lb. against 35s. 9d. per lb. previously. Much higher prices, however, are reported to have been paid for marginal quantities. Japanese buyers are reported to be prepared to do business around £5 to £6 per lb. and the French market is on much the same footing. Earlier this week the Canadian price was raised by $1 to $6/6.25 per lb.

TUNGSTEN.—The successive increases in the price of tungsten ore recently announced can be taken as reflecting a strong international market and there are many who believe that the price may go a good deal higher in the months ahead. It is certainly true that demand, both here and on the Continent, has been persistently good but whether the current price contains an element of anticipated American buying is not clear.

The present situation in the States lends itself to this confusion as consumption during the first nine months of 1954 fell to its lowest level since 1949, while U.S. domestic output reached an all time peak. However, the U.S. Government is absorbing the domestic production at well above the current world market price. Moreover, the U.S. Government is still being supplied from contracts concluded previously at prices much higher than those prevailing to-day.

All that being so, tungsten ore supplies available to commercial consumers appear to be running down fast, and with indications of renewed enquiries from U.S. consumers, a highly competitive price situation could well develop to obtain the limited supplies available.

The foregoing assessment of the current state of the tungsten market rests, however, on certain suppositions which are impossible to confirm. Indeed, the situation outlined sits uneasily with the statement recently forwarded to the U.S. Tariff Commission by the Bradley Mining Company urging a minimum increase in duty on tungsten ore or concentrates from the present rate of 50 c. per lb. to $1.50 per lb. This statement was forwarded on the assumption that the strength of the current market price was, in fact, very thin being largely supported by the U.S. Government's price support programme at home and through its international contracts. Thus tariff protection is being urged as a second line of defence against the time when these contracts expire and the U.S. Government's stockpiling programme eases.

In any event, supplies are not available in large quantities at present prices. Effective demand from the U.K. and the Continent has been sufficient to hoist the price to its present level. Thus any sign of American purchases in the market must raise the price to much higher levels for if U.S. purchasers want to buy tungsten; price considerations will play only a minor roll.

The London Metal Market

(From Our Metal Exchange Correspondent)

The tin market has presented an uncertain appearance recently, and the future seems to be dependent upon whether the International Tin Agreement will be ratified and the scheme put into operation. The general opinion seems to be that the Agreement will function in due course, and in the meantime market conditions are likely to remain much the same. On Thursday morning the Eastern price was equivalent to £694¼ per ton c.i.f. Europe.

Copper still has a very firm undertone and consumer demand is maintained at a high level. There has been some demand on the London Metal Exchange for copper for cash and intermediate dates, and the backwardation is still in the region of £20 per ton. Talks are still going on in regard to price stabilization for supplies of metal by Commonwealth producers to British consumers, but it is not generally expected that any early decisions will be reached. Rumour persists on the other side of the Atlantic of a rise in the American price. It may be that some would like to see the quotation higher but any advance would be contrary to the large American producers' marketing policy, although maintenance of the 30 c. per lb. quotation entails allocating supplies to fabricators and the imposition of control on exports.

Lead has eased off a little, but with the American Government stockpile buying and the price there held at 15 c. per lb. there seems no reason to anticipate any weakness in the market here. Consumption is maintained at a good level both here and on the Continent, and supply seems to be just about equal to demand.

Zinc is a steady market and consumption both here and on the Continent continues at a good rate, but in America the market still has to be bolstered by heavy buying for the stockpile. On the other hand demand for prime western seems to have shown some expansion recently.

Closing prices and turnovers are given in the following table:—

	January 13		January 20	
	Buyers	*Sellers*	*Buyers*	*Sellers*
Tin				
Cash	£694	£695	£685	£686
Three months	£694	£695	£688½	£689
Settlement	£695		£686	
Week's turnover	325 tons		415 tons	
Lead				
Current half month	£103¼	£103½	£102	£102¼
Three months	£103½	£103¾	£102¼	£102½
Week's turnover	2,300 tons		1,600 tons	
Zinc				
Current half month	£85	£85¼	£85	£85¼
Three months	£83¾	£83⅞	£83½	£84
Week's turnover	3,475 tons		2,400 tons	
Copper				
Cash	£294	£295	£300	£302
Three months	£277	£278	£284	£284½
Settlement	£295		£302	
Week's turnover	4,700 tons		3,850 tons	

OTHER LONDON PRICES — JANUARY 20

ANTIMONY

English (99%) delivered, 10 cwt. and over ... ... £210 per ton
Crude (70%) ... ... £200 per ton
Ore (60% basis) ... ... 22s./24s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) ... ... £519 per ton

OTHER METALS

Aluminium, 99.5%, £163 per ton
Bismuth (min. 2 cwt. lots) 16s. lb.
Cadmium (Empire), nominal
Chromium, 6s. 5d./7s. lb.
Cobalt, 21s. lb.
Gold, 251s. 8d. f.oz.
Iridium, £39 oz. nom.
Magnesium, 2s. 4d. lb.
Manganese Metal (96%-98%) £225/£262
Osmiridium, £40 oz. nom.
Osmium, £46 oz. nom.
Palladium, £6 15s. oz.
Platinum, £30/£31
Rhodium, £43 10s. oz.
Ruthenium, £22 oz.
Quicksilver, £110 ex-warehouse
Selenium, 43s. nom. per lb.
Silver, 74¼d. f.oz. spot and 74d. f'd.
Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC

Bismuth ... ... 50% 7s. 3d. lb. c.i.f.
40% 6s. 3d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (semi-friable) 48% £12 12s. 6d. per ton c.i.f.
" Refractory 45% ... £12 5s. 0d. per ton c.i.f.
" Smalls 42% ... £8 17s. 6d. per ton c.i.f.
Baluchistan Metallurgical ... £13 5s. per ton c.i.f.
Magnesite, ground calcined ... £26-£27 d/d
Magnesite, Raw ... ... £10-£11 d/d
Molybdenite (85% basis) ... 105s. 3d.-108s. 1d. per unit c.i.f.
Wolfram and Scheelite (65%) ... 220s./230s. - U.K.*
" " " Gov't Stock d/d 226s. 6d. plus charges
Tungsten Metal Powder (98% Min. W.) ... 18s. nom. per lb. (home)
Ferro-tungsten ... ... 15s. nom. per lb. (home)
Carbide, 4-cwt. lots ... ... £37 6s. 3d. d/d per ton
Ferro-manganese, home ... £54 15s. 0d. per ton
Manganese Ore Indian c.i.f. Europe (46%-48%) ... ... 66d./68d. per unit nom.
Brass Wire ... ... 2s. 10¾d. per lb. basis
Brass Tubes, solid drawn ... 2s. 3¾d. per lb. basis

* Ex-government stock for prompt delivery from January 21

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

Business activity was well maintained during the past week. It was, however, directed towards certain definite channels, mainly industrial. Gilt-edged staged a short rally, following the maintenance of the bank rate last Thursday, but fell away later. In spite of the good revenue returns, pressure on sterling continued, bringing the price of gold up to a record high level.

Inflationary fears and hardening money rates have been the immediate cause of the sharp fall in gilt-edged, but there also remains in the background the feeling that the approach to the convertibility of sterling may well herald a higher bank rate, at least temporarily, as a means of attracting hard currency to Britain. Exports to the dollar area have recently been at a conspicuously lower level.

Kaffir shares generally were lower despite good returns and the output improvement due during the coming years. This can probably be mainly attributed to the continuing reduction of genuine risk capital and the fear of local political developments in the Union.

Three finance houses were outstanding. Anglo American Corporation rose on the good quarterly results announced by this powerful and well managed group. Consolidated Goldfields were also a strong feature following the opening of the Luipaards Vlei uranium plant and the prospect of the start of the Vogel plant next month. The Doornfontein and West Driefontein uranium plant, also in the Goldfields group, should begin operations next year. The fact that Randfontein will be in full production very shortly encouraged Johannesburg Consolidated.

Among individual mines, East Rand Proprietary jumped on rumours of good returns due during the next few days. Harte-beestfontein were another firm spot, responding to steady buying. Luipaards Vlei and Randfontein rose due to the favourable news mentioned above.

The excellent Orange Free State results achieved by Anglo American Corporation stimulated some of the shares, but in the main, had surprisingly little effect. Free State Geduld eased despite the 100 per cent payability and 2,134 in. values disclosed on the property by the drive from Western Holdings. President Brand again produced good figures but the shares only rose the turn. Orange Free State Investment Trust which has interests in all the more promising properties, fell sharply. Freddies Consolidated were very weak. The company still continues to make heavy losses and technical mining difficulties and low grade reserves, together with the worsening financial position of the property, gave rise for anxiety by stockholders.

West African, West Australian and miscellaneous gold shares were mostly lower where changed, but the market generally was very quiet with little interest. Zambesis, however, turned easier in sympathy with Tanks and St. John d'El Rey lost ground on renewed realization of Brazil's monetary difficulties particularly with sterling.

Diamonds suffered from the general malaise in Kaffirs but Anglo American Investment were an exception and went ahead strongly.

Coppers were interesting despite falls in some of the leading issues due to profit-taking and the continued strike by African labour. Selection Trust finished the week higher on balance due to the increase in the value of the holdings in American Metal and Vaal Reefs. The break-up value of these shares, although of course theoretical, is probably considerably in excess of the present market price. Informed opinion suggests that the earlier Rhodesia Katanga review may have been considerably underestimated in view of the difficult nature of the ore found on the property. The shares went ahead strongly.

Tin issues displayed few features of interest. Exceptionally, Beralts jumped on account of strong buying on a market short of stock and also the higher tungsten price.

FINANCE	Price Jan. 19	+ or — on week
African & European	3 3/8	—1/8
Anglo American Corpn.	8 11/16	+ 1/16
Anglo-French	24/4½	.....
Anglo Transvaal Consol.	28/9	.....
Central Mining (£1 shrs.)	41/3	—6d
Consolidated Goldfields	60/-	+ 1/10½
Consol. Mines Selection	51/3	+ 7½d
East Rand Consols.	2/9	—3d
General Mining	5½	.....
H.E. Prop.	9/7½	—3d
Johnnies	45/9	+ 1/3
Rand Mines	3 3/8	.....
Rand Selection	43/1½	—1/10½
Union Corporation	31/3	—1/3
Vereeniging Estates	4¾	.....
Writs	40/7½	—10½d
West Wits	41/3	—1/3
RAND GOLD		
Blyvoors	31/3	+ 3d
Brakpan	7/6	—3d
Buffelsfontein	30/-	+ 3d
City Deep	13/6	—9d
Consol. Main Reef	19/4½	—7½d
Crown	43/9	—1/10½
Daggas	61/3	—1/10½
Dominion Reefs	37/6	—6d
Doornfontein	32/6	—1/-
Durban Deep	30/-	—1/3
E. Champs	9/9	.....
E. Daggas	10/6	—6d
E. Geduld (4s. units)	27/6	.....
E. Rand Props	47/6	+ 2/6
Geduld	3½	.....
Govt. Areas	11/3	+ 6d
Grootvlei	19/6	—6d
Hartebeestfontein	40/-	+ 2/9
Libanon	9/3	+ 3d
Luipaards Vlei	23/3	+ 1/3
Marievale	20/-	—3d
New Kleinfontein	10/9	.....
New Pioneer	16/-	—3d
Randfontein	68/6	+ 1/7½
Robinson Deep	20/9	—6d
Rose Deep	14/6	.....
Simmer & Jack	4/3	—3d
S.A. Lands	21/10½	.....
Springs	3/1½	.....
Stilfontein	27/-	—6d
Sub Nigel	37/6	—1/3
Vaal Reefs	36/-	.....
Van Dyk	4/3	.....
Venterspost	12/3	.....
Vlakfontein	18/3	+ 3d
Vogelstruisbult	35/3	+ 3d
West Driefontein	5¾	.....

RAND GOLD contd.	Price Jan. 19	+ or — on week
W. Rand Consolidated	47/6	—1/3
Western Reefs	46/3	.....
O.F.S. GOLD		
Freddies	5/9	—9d
Freddies Consolidated	13/9	—2/-
F.S. Geduld	5 3/8	—½
Geoffries	17/9	—3d
Harmony	36/6	—1/-
Loraine	13/7½	—7½d
Lydenburg Estates	23/1½	—1/10½
Merriespruit	12/10½	.....
Middle Wits	19/9	—9d
Ofsits	75/7½	—1/3
President Brand	71/3	+ 7½d
President Steyn	46/9	—2/6
St. Helena	28/-	—1/3
Virginia Ord.	17/3	+ 1½d
Welkom	28/3	—1/-
Western Holdings	5¼	—¼
WEST AFRICAN GOLD		
Amalgamated Banket	2/6	.....
Ariston	7/1½	—3d
Ashanti	23/9	—9d
Bibiani	5/1½	—1½d
Bremang	1/6	.....
G.C. Main Reef	3/9	—1½d
Konongo	2/6	—1½d
Lyndhurst Deep	1/4½	.....
Marlu	1/6	.....
Taquah	3/-	—3d
Western Selection	10/4½	—7½d
AUSTRALIAN GOLD		
Gold Mines of Kalgoorlie	14/9	.....
Great Boulder Prop.	8/6	.....
Lake View & Star	15/6	—3d
Mount Morgan	18/9	+ 3d
North Kalgurli	7/10½	—4½d
Sons of Gwalia	7/9	.....
Western Mining	11/-	.....
MISCELLANEOUS GOLD		
Cam & Motor	8/9	.....
Champion Reef	4/3	.....
Falcon Mines	7/3	+ 1½d
Globe & Phoenix	23/3	+ 3d
G.F. Rhodesian	7/-	.....
Motapa	1/7½	.....
Mysore	5/3	.....
Nundydroog	6/-	.....
Ooregum	4/4½	.....
St. John d'El Rey	14/6	—9d
Zams	47/-	—1/3

DIAMONDS & PLATINUM	Price Jan. 19	+ or — on week
Anglo American Inv.	9¼	+ ⅛
Casts	27/3	—1/6
Cons. Diam. of S.W.A.	7xD	.....
De Beers Defd. Bearer	6 1/16	—1/16
De Beers Pfd. Bearer	16¼	—¼
Pots Platinum	9/9	—1½d
Waterval	15/6	.....
COPPER		
Bancroft	34/7½	—1/9
Chartered	108/3	—4/6
Esperanza	5/3	.....
Messina	6 3/8	— ⅛
Nchanga	11 7/16	—⅛
Rhod. Anglo-American	93/-	.....
Rhod. Katanga	18/1½	+ 4½d
Rhodesian Selection	31/10½	+ 1/4½
Rhokana	32½	—¼
Rio Tinto	42¾	.....
Roan Antelope	23/-	—1/1½
Selection Trust	73/6	+ 1/-
Tanks	6 3/8	—⅛
Tharsis Sulphur Br.	7¼	—¼
TIN (Eastern)		
Ayer Hitam	32/3	—9d
Gopeng	7/9	+ 3d
Hongkong	8/9	+ 1½d
Ipoh	19/6	.....
Kamunting	7/9	.....
Kepong Dredging	3/6	.....
Kinta Tin Mines	10/9	.....
Malayan Dredging	9/7½xR	.....
Pahang	12/-	.....
Pengkalen	8/7½	+ 1½d
Petaling	8/-	.....
Rambutan	16/6	+ 3d
Siamese Tin	6/6	+ 1½d
Southern Kinta	18/3	+ 3d
S. Malayan	8/1½xR	.....
S. Tronoh	11/9	+ 6d
Sungei Kinta	12/-	.....
Tekka Taiping	6/1½	+ 1½d
Tronoh	7/4½xR	.....
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	14/1½	+ 1½d
Beralt Tin	31/-	+ 3/-
Bisichi	6/3	.....
British Tin Inv.	20/1½	+ 1½d
Ex-Lands Nigeria	3/-	+ 1½d
Geevor Tin	13/4½	+ 3d

TIN (Nigerian and Miscellaneous) contd.	Price Jan. 19	+ or — on week
Gold & Base Metal	2/9	.....
Jantar Nigeria	7/10½	—1½d
Jos Tin Area	15/3xD	—3d
Kaduna Prospectors	2/7½	.....
Kaduna Syndicate	2/6	.....
London Tin	7/1½	—1½d
United Tin	3/1½	+ 1½d
SILVER, LEAD, ZINC		
Broken Hill South	55/3	+ 9d
Burma Corporation	3/1½	—3d
Consol. Zinc	49/-xD	+ 3/6
Lake George	9/1½	+ 1/1½
Mount Isa	47/6	+ 3d
New Broken Hill	39/9	—9d
North Broken Hill	71/-	+ 4½d
Rhodesian Broken Hill	13/3	+ 4½d
San Francisco Mines	23/9	.....
Uruwira	6/-	+ 1/-
MISCELLANEOUS		
BASE METALS & COAL		
Amal. Collieries of S.A.	46/9xD	+ 9d
Associated Manganese	39/3	—9d
Cape Asbestos	11/9xD	—6d
C.P. Manganese	41/9	.....
Consol. Murchison	58/1½xD	+ 1/3
Natal Navigation	2 3/8	—¼
Turner & Newall	110/-	.....
Wankie	18/-	.....
Witbank Colliery	4¼	.....
CANADIAN MINES		
Dome	$33¼xD	.....
Hollinger	$30¼	—1
Hudson Bay Mining	$103	+ 1
International Nickel	$107½	—¼
MiningCorpn.ofCanada	£6 3/8	+ 3/8
Noranda	$156	+ 1
Quemont	£8¼	+ ¼
Yukon	4/7½xD	—3d
OIL		
British Petroleum	86/6	+ 2/-
Apex	31/6	—6d
Attock	52/6	—7½d
Burmah	6¼	—1/16
Canadian Eagle	50/6	—3d
Mexican Eagle	20/-xR	—3/6
Shell	6 11/16	+ 1/16
Trinidad Leasehold	33/6	—9d
T.P.D.	27/6	+ 3d
Ultramar	34/6	+ 1/-

COMPANY NEWS AND VIEWS

The Gold Mining Industry in Western Australia

Despite a steady increase in gold production—780,105 f.oz. have been recorded in Western Australia for the 11 months of the year to November 30, compared with 749,302 f.oz. for the corresponding period of 1953, and the payment of £A1,054,636 in dividends in the first ten months of 1954, compared with £A694,282 in the same portion of 1953—the position of gold mining is more or less precarious, in the absence of a substantial increase in the price of gold on the world market.

In considering the dividend and production figures for Western Australia, given above, it must be noted that two mines are largely responsible for the apparently satisfactory position, Central Norseman Gold Corporation and Hill 50 Gold Mine, which are mining high grade ore in substantial tonnages. Apart from Western Australia, production from other States is small. The State Government of Western Australia continues to give assistance to the industry, and a loan of £A100,000 is to be made to Sons of Gwalia Ltd. which, with the company's own financial effort, it is hoped to restore the mine to profitable operation. State mining will receive a set-back with the closure of the Big Bell mine, due at the end of 1954, after a long career as a producer of some 40,000 tons of 3 dwt. ore per month. The Commonwealth Government is fully aware of the serious position of the industry, particularly in Western Australia, where the population of so much of the State depends entirely upon mining.

The Commonwealth is introducing legislation to provide a subsidy for the industry, the basis of which is the payment to mining companies of a sum equal to three-quarters of the excess of the average cost of production per oz. of gold over £A13 10s., the maximum sum payable being £A2 per oz. To small producers, the subsidy will be at the flat rate of £A1 10s. per oz. The assistance is welcome, but it had been hoped that a larger subsidy would be granted.

Rand and O.F.S. Quarterly Results

Since last week when the Johannesburg Consolidated Investment Company published details of operations carried out by the mines in their group in respect of the three months ended December 31, 1954, quarterly reports from the Anglo American, General Mining and Central Mining-Rand Mines Groups have been received.

Although these latest results, which few would dispute contain some outstanding features, have been received by the market without enthusiasm, this has been chiefly due to South African political considerations together with high investment activity on the home industrial market.

Most promingnt of the Anglo American reports was President Brand's disclosure that since mid 1953, when development commenced, ore reserves amounting to 905,100 tons with an average value of 1,011 in. dwt. had been established. This is, in South African mining history at any rate, an unprecedented achievement and confirms that President Brand is now the richest mine in South Africa. Meanwhile, despite gold absorption and other initial difficulties which are inevitably being encountered, it would not be unduly optimistic to look for a distinct rise in the mill grade during the next few months. In addition, the news that considerable progress has been made towards establishing an underground connection between the property's two shafts will mean that in the near future the essential extra labour for raising production to more economic levels may be employed underground. It is expected that treatment of the company's slimes for the extraction of uranium will start at the President Steyn plant towards the end of January.

It was unfortunate, that is to say in market terms, that the 41 haulage north from Western Holdings No. 1 shaft, which was reported to have crossed the common boundary with Free State Geduld, showed Basal Reef values of "only" 2,134 in. dwt. Somewhat naturally, in view of the point at which this haulage must have crossed the border, namely somewhere between the two richest boreholes in the O.F.S. which gave over 23,000 and 12,500 in. dwt. respectively, more sensational values were expected. However, by any mining standards, 2,000 in dwt. is extremely rich and holds out considerable promise for the future mining prospects in this area. Due to this high disclosure F.S. Geduld development values rose sharply to 995 in. dwt. from 694 in. dwt. previously. Payability also advanced sharply to 97 per cent from 89 per cent. Conversely, owing to the absence of sampling in that part of Haulage 41 in its own property, development values at Western Holdings fell to 818 in. dwt. from 920 in. dwt. On the other hand, a substantial addition was made to ore reserves at this mine which now stand at 1,557,000 with an average value of 11.49 dwt.—an increase of 1.41 dwt. over the previous year's figure.

Steady progress was reported from President Steyn with values and payability little changed from those of the previous quarter. And while at Welkom, although values declined somewhat, payability rose to 82 per cent which is the highest level yet reached and compares with 78 per cent previously. Ore reserves at Welkom also rose by 589,500 tons to 1,895,000 tons with an average value of 5.89 dwt.—a figure which shows virtually 1 dwt. gained over last year's figure.

Apart from the improvement in gold-uranium profits of Stilfontein, Ellaton and West Rand Consolidated there is little that might be considered outstanding in the General Mining development results. Payability at Ellaton, however, dropped sharply to 61 per cent from 89 per cent with a value of 295 in. dwt. as against 280 in. dwt. Footage sampled also showed a marked increase. Stilfontein also sampled more footage while payability and value remained largely unchanged. Ore reserves at this mine were very much better than those of the previous year and were estimated at 3,206,000 tons averaging 8.26 dwt. gold over a stoping width of 36 in.

Amongst the Central Mining-Rand Mines quarterlies the recovery of Harmony's values to 100 per cent was particularly notable. A sharp improvement in footage developed at this mine to 7,113 ft. from 4,205 ft. in the previous quarter was also reported but although footage sampled rose to 1,535 ft. from 1,010 ft. values declined somewhat to 528 in. dwt. from 556 in. dwt. in the preceding three months. From Blyvooruitzicht came the disclosure that better payability had been experienced the percentage of which rose to 91 from 78. On the other hand values dropped considerably to 607 in. dwt. from 925 in. dwt.

Jos Tin to Make Bonus Issue of 1 for 5

In order to give shareholders some tangible participation in previous years' undistributed profits Jos Tin Area (Nigeria) is to capitalize £17,864 from reserves by allotting 1 share for every 5 stock units at present held. It is emphasized, however, that this proposal carries no implication that the present rate of dividend will be maintained on the increased capital.

During the year ended July 31, 1954, a total of 145 tons of tin concentrates were sold by the company with 157¼ tons in respect of the previous twelve months. The average price per ton received was £482, or £100 less than the previous year's average. In addition, although columbite production represents only a small part of total output, the 4 tons sold, as compared with 3½ tons previously, made a substantial contribution to profits.

Year to July 31	*Total Revenue*	*Tax-† ation*	*Net Profit*	*Divi-dend*	*To Reserve*	*Carry Forward*
	£	£	£	£	£	£
1954	102,529	18,852	81,379	9,825	17,864	19,242
1953	125,285	25,782	108,503	9,825	4,000*	28,366

* Special taxation reserve.
† Including £79 028 (£101,356) from proceeds of tin and columbite concentrates, and £22,699 (£23,115) from dividends and interest.

A dividend of 20 per cent was again paid on the issued capital of £89,320 in stock units of 5s.

Production during the first two months of the current financial year advanced to 28½ tons of tin concentrates from 26¼ tons in the previous corresponding period. And in view of the current tin price profits should be running at a satisfactory level. Nevertheless it must be borne in mind that the company's output is on the decline due to the exhaustion of the properties owned. This factor, together with the upward trend in costs, is a matter that gives rise to some concern as to the future. Exploration for new areas is, therefore, constantly in progress. Mr. A. B. D. Fox is chairman. Meeting, London, February 2.

Westminster Bank Pays 8 Per Cent Final on "B" Shares

As forecast by the chairman of the Westminster Bank, Lord Aldenhan, at the time of the recent capital reconstruction proposals, a final of 10 per cent has been recommended on the £8,838,737 "B" shares of £4 of which £1 5s. is now paid up. This compares with the interim dividend of 10 per cent paid on the previous £7,070,990 in £4 "B" shares of which only £1 was paid up. Dividends in respect of the year ended

December 31, 1954, therefore amounted to 16 per cent on the new capital which represents a rise of 1.6 per cent over the previous distribution. With the recommendation of a 6¼ per cent final dividend on the company's £2,249,167 "A" stock total distribution on this part of the capital is brought to 12½ per cent thereby remaining unchanged from last year's level. Under the capital reorganization scheme this stock was accorded a non-cumulative preferential right to 12½ per cent which ranks in priority to the £4 shares.

Net profit of the bank for the past year, after providing for rebate and taxation, and after appropriations to the credit of reserves for contingencies was £1,623,197 (£1,474,736). Of this figure £932,439 (£854,658) was absorbed by dividends and after appropriation to reserve of £679,843 (£600,000) the carry forward was increased to £712,814 from £701,899 brought in.

Company Shorts

Tin and Associated Minerals Increases Ore Reserves.—It has been disclosed by Tin and Associated Minerals, a privately owned company, which owns important columbite-bearing properties in Nigeria, that since last year important changes have taken place in ore reserves.

It is now stated that 1,310,000 cu. yd. have been fully proved containing 3.3 lb. columbite per cu. yd. This compares with 730,000 cu. yd. averaging 3.21 lb. columbite previously. Additonally, partially proved ore has been estimated at 1,440,000 cu. yd. with a columbite content of 2.3 lb. per cu. yd., making with the proved ore a total of 2,750,000 cu. yd. averaging 2.8 lb. columbite per cu. yd.

A reduction in indicated ore has taken place and the total now stands at 13,000,000 cu. yd. containing 1.67 lb. columbite per cu. yd. The reason for the reduction, it is stated, is that computation has been confined to an area mapped as albite granite, though there is in fact economic ground outside it. As it is not proposed to take this outside area into account at this stage the greatly increased inferred figure is not given. A power drill is expected imminently which will enable drilling at greater depths and it is therefore likely that tonnages will soon be still further increased.

Tanks Central's Accounts.—In addition to publishing information regarding the up-to-date position of exploration and development operations being carried out by Tanganyika Central Gold Mines and Central South African Lands and Mines at Rhenosterhoek No. 52 in the January 7 issue of *The Mining Journal*, page 21, details of the accounts for the year ended June 30, 1954, were also summarized. These showed erroneously that the company's operations had resulted in a profit. The correct position was that a loss of £2,074 (£1,836) was incurred and that the adverse balance carried forward was increasd to £109,062 compared with £106,922 brought in.

New Guinea Goldfield's Increased Profits.—Total revenue earned by New Guinea Goldfields during the year ended September 30, 1954, rose to £400,952 from the previous figure of £351,922. After expenses of £368,240 (£314,549) the net operating profit for the year fell slightly to £32,712 from £37,373. The balance carried forward was increased to £118,177 (£78,676). During the year apart from the certain amount of damage to property and interruptions to production in the early part of the year due to an exceptionally wet season, operations were fully maintained. From a total of 40,000 tons milled (30,400 tons), 17,820 oz. of bullion were produced (21,623 oz.).

Witbank : Production Up, Dividend Maintained.—Coal despatched from the Witbank Colliery during the year ended August 31, 1954, totalled 1,610,500 tons, an increase of 75,691 tons over the previous year's figure. This increase was due to a full year's production at the Southern section which more than offset a lower output from the Wolvekrans section.

Year to Aug. 31	*Total Revenue* £	*Taxation* £	*Net Profit* £	*Dividends* £	*To* Reserve* £	*Carry Forward* £
1954	264,378	69,751	186,867	67,375	177,409	92,373
1953	303,379	94,316	203,824	67,375	205,479	150,290

* Appropriations for expenditure on mining assets and trade investments.

Dividends amounting to 17½ per cent were maintained at the previous year's level on the issued ordinary capital of £385,000 shares of £1 each.

While a full report on the company's operations must await the statement of Mr. T. Reekie, chairman, at the meeting to be held in Johannesburg on January 31, it has been stated that as in past years, production was again curtailed by inadequate railway truck supplies.

November Mine Returns

AUSTRALIAN GOLD

Company	*4 weeks to Nov. 2 1954* Tons (000)	Yield (oz.)	*4-weekly period since year-end*	*Current Financial Year Total to date* Tons (000)	Yield (oz.)	*Last Financial Year Total to date* Tons (000)	Yield (oz.)
Boulder Perseverance	10·5	2,344	8	82·5	19,255	80·6	19,708
Central Norseman	12·2	6,139	8	97·0	52,029	94·2	46,029
Central Victoria*	103·1	521	8	1248·9	3,409	1667·9	5,906
G.M's of Kalgoorlie	15·4	3,872	8	121·7	34,397	120·0	34,701
Morning Star	1·3	552	8	10·9	7,562	11·4	11,756
New Coolgardie	5·3	2,924	8	40·3	20,291	42·9	19,973
North Kalgurli	19·1	4,645	11	203·2	47,229	225·6	52,476
Sons of Gwalia	10·6	2,201	11	94·6	21,524	96·9	21,911
South Kalgurli	7·3	1,517	8	63·6	13,138	70·4	13,973

* Cu. yd. dredged

SOUTHERN RHODESIAN GOLD

Company	*November, 1954* Tons (000)	Yield (oz.)	Profit (£000)	*Months since year end*	*Current Financial Year Total to date* Tons (000)	Yield (oz.)	Profit (£000)	*Last Financial Year Total to date* Tons (000)	Yield (oz.)	Profit (£000)
Arcturus	3·2	911	3·2	5	15·0	4,624	15·9	15·3	—	14·5
Cam & Motor	24·0	7,653	†40·9	5	120·5	37,762	207·9	120·7	37,209	224·2
Falcon Mines	17·4	3,189	16·0	2	34·9	6,396	21·6	32·6	5,195	11·9
Globe & Phoenix	6·2	3,532	22·6	11	66·8	39,428	256·3	66·2	37,485	241·4
Motapa Gold*	17·8	2,477	2·8	11	200·5	27,528	36·0	224·7	26,168	15·1
Muriel Mine	3·3	1,025	9·9	5	15·8	4,757	50·4	9·2	—	36·5
Rezende	6·6	786	L 5·6	11	71·5	11,584	L10·7	71·6	12,610	15·7
Tebekwe	7·3	979	1·3	5	37·4	5,056	6·4	41·0	—	13·2

* Excluding premium gold sales
† Including £4,576 from accumulated concentrates which were retreated in Roasting Unit, also £606 additional revenue in respect of gold produced during September.
L indicates a loss.

MISCELLANEOUS GOLD

Company	*November, 1954* Tons (000)	Yield (oz.)	*Months since year end*	*Current Financial Year Total to date* Tons (000)	Yield (oz.)	*Last Financial Year Total to date* Tons (000)	Yield (oz.)
Br. Gu. Consol.*	179·6	1,895	11	2191·3	19,743	2150·9	14,143
Clutha River*	235	646	8‡	1709	3,050	1775	3,918
Kentan (Geita)	22·8	3,400	5	111·1	17,076	111·8	16,905
New Gu. G'fields	3·5	1,383	2	7·0	2,729	6·0	2,470
St.Johnd'ElRey	27·2	£130,000†	11	289·5	£1,337,385	285·5	£1,625,018
Transv'l G.M. Es	24·1	5,349	11	268·9	58,789	292·9	60,000

* Cu. yd. dredged
† Estimated realizable value
‡ 4-weekly period since year end

INDIAN GOLD

Company	*November, 1954* Tons (000)	Yield (oz.)	*Months since year end*	*Current Financial Year Total to date* Tons (000)	Yield (oz.)	*Last Financial Year Total to date* Tons (000)	Yield (oz.)
Champion Reef	15	5,520	11	164	64,514	126	49,253
Mysore	20	6,338	11	200	72,784	172	64,884
Nundydroog*	20	6,197	11	232	66,276	223	61,954
Ooregum	—	173	11	—	1,575	67	19,671

* Include tailings

OIL OUTPUT

Company	*November (in tons)*	*Months Since Year End*	*Cumulative Totals (in tons)* This year to date	Last year to date
Anglo Ecuadorian	27,294	8	217,453	209,224
Apex Trinidad	37,233	2	74,737	73,830
Kern Oilfields	25,659	6	158,038	166,002
Lobitos Oil	41,407	11	455,855	426,524
Trinidad Central	8,555	11	96,591	89,418
Trinidad Leaseholds	81,265	5	401,781	375,233
Trinidad Petroleum	40,386	4	163,551	157,408
Ultramar Oil*	115,416	11	1,197,178	1,168,680

Note—1 ton taken to equal seven barrels
* Output figures are for S.A.P. Las Mercedes in which Ultramar holds a 50 per cent interest

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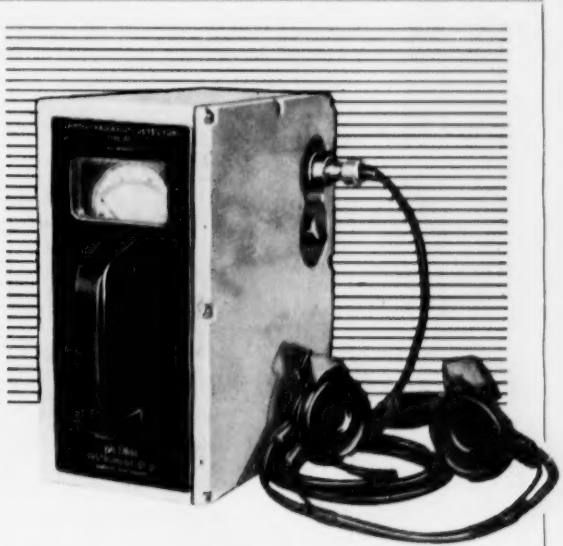

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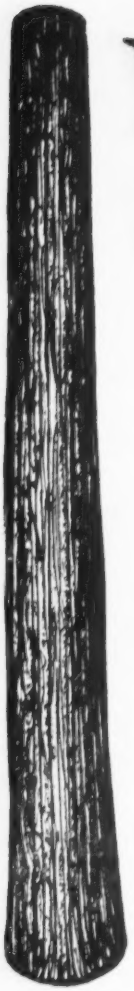

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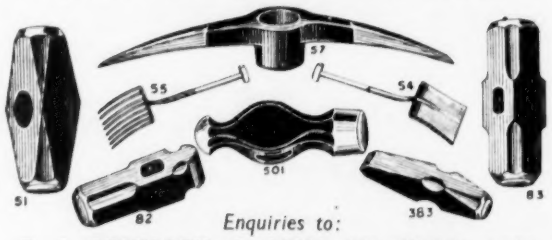

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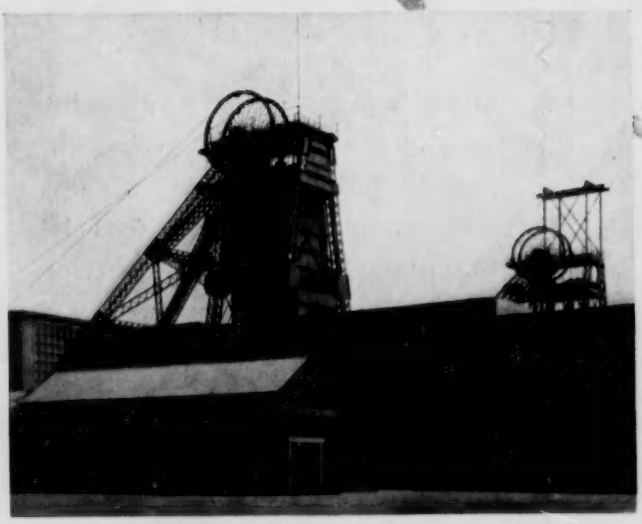

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